



Medicinal Aspects of Weed: A Review

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This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Review Article

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ABSTRACT

Weed as a plant growing where it is not desired. Sometimes certain weed turns out to be a great source of food or medicine. Some of the herbs used to prepare medicines are considered as weeds by agriculturists. Some of the farmers do not have any knowledge on medicinal value of weeds. A chemical analysis of weeds proves that there are many chemical compounds present, are may be

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useful for treatment of many diseases. Small species of Parthenium, Amaranthus, Argemone, Cynodon, Cyprus, Mimosa and Oxalis easily found in our garden and roadside, are having many medicinal values. The growing and marketing of medicinal herbs which are currently categorized as weeds could become a very good source of income to the farmers. By the help of this review, we have explored the various medicinal properties of weeds which will serve mankind and also the common people will be able to explore their knowledge regarding weeds and can also utilize them as their home remedy.

Keywords: Weed; medicinal uses; herbs; diseases.

1. INTRODUCTION

The word “drug” came from a French word “Droque” which literally stands for ‘dried plant’. According to estimates, at least 35000 wild species with documented therapeutic benefit are used in developing nations [1]. Ancient Babylonia recorded the usage of therapeutic herbs as far back as 60000 years ago. Around 5000 years ago, there were reports of the use of traditional medicine in parts of Egypt. In Asia and Greece, reports of the therapeutic use of herbs date back to 2500 years [2]. About 5000 years ago, the Ayurvedic medical method was discovered in India [3]. The use of traditional medicines in Japan (Kampo) dates back over 1500 years [4]. Natural goods have been utilized for their healing abilities for a very long time and are the primary source of therapeutic medications. The WHO estimates that 80% of people on earth will utilize herbal medicine in some capacity for medical treatment. Because they are safe, have no side effects, are inexpensive, and are available to everyone, traditional herbal medicines are becoming more and more popular around the world [5]. India is the world's greatest producer of medicinal plants and is aptly referred to as the world's botanical paradise [6,7]. The market is flooded with synthetic pharmaceuticals that are expensive, have negative side effects, and harm the environment. All of these medications have the risk of negative side effects. For instance, about 5% of people worldwide may experience adverse responses as a result of some drugs [8]. Weeds are one of the many herbal sources that may yield valuable medications if they underwent thorough biochemical testing, identification, and characterization. Weeds are an often used source for herbal remedies. However, due to their detrimental effects on agricultural production systems, these plants should be controlled and eliminated from agroecosystems. But it's interesting to note that several well-known weeds are also sources of traditional medicines and pharmaceuticals. Through their metabolic processes, all plants produce several compounds with potential medicinal use.

Through their metabolic pathways, many plants produce certain substances known as bioactives or phytochemicals that are used in medicine. Because they generate active chemicals and are useful against some ailments, weeds are used as medication. Mucilage, Phenols, Tannins, Coumarins, Anthraquinones, Flavonoids, Anthocyanins, Glucosilicates, Volatile Oils, Saponins, Cardiac Glycosides, Alkaloids, Vitamins, and Minerals are a few of the primary classes of these active chemical compounds. The primary secondary metabolites that make up the active molecules are those that the plant produces to fend off diseases like insects or severe environmental circumstances like cold and drought [9]. Weeds are mostly considered to be a danger to cultivated crops like vegetables, and they cause more losses than either illnesses or insects. Therefore, eliminating weeds is a crucial step in ensuring the crop yields as much as possible. To limit weed growth, which eventually lowers the nutritional content of vegetables, several herbicides were commonly utilized. Instead of eliminating these weeds, it is suggested that we employ them to address this significant problem. Considering this, such losses may be made up for by investigating the potential therapeutic use of such weeds. The main driving force behind this was the discovery of alkaloids, flavonoids, and other secondary metabolites that act against various diseases. Modern medications really evolved from traditional treatments. Many weedy plants, like *Amaranthus spinosus*, which has an alkaloid that aids in the treatment of ulcerated mouth, ulcers, and sores, have been shown to contain various phytochemicals. In Sri Lanka, Pakistan, and India, traditional medicine has employed *Chrysopogon zizanioides* (Vetiver) [10]. Malvaceae *Sida cordifolia* weed is used to treat ailments including fever, headaches, and intestinal parasite infestations. *Asteracantha longifolia* (*Hygrophilla longifolia*), a plant has therapeutic benefits for diabetes and Ayurveda [11]. *Leucas aspera*, a member of the Lamiaceae family, is frequently referred to as "Thumbai" (in

Tamil). It has historical significance and its blossoms are employed as insecticides, expectorants (treats coughs), stimulants, and aperients (relieves constipation). Children's colds are treated with its flowers and honey mixture [12]. India is one of the floristically richest countries in the world and is widely renowned for its long tradition of using plants for several purposes. Local people employ a variety of plants from the native flora as food and traditional remedies, and this information is passed down orally down the generations. In this, attempts to document the information have only been done very recently. The quantity of substances already retained in plants strongly influences how well weeds are used and how this sector develops. India is the eighth-most biodiverse nation in the world. Under such a complex ecology, weed flora competes fiercely with agricultural crops, horticultural crops, decorative plants, medicinal plants, forest trees, and other wild plant biota. Although each category is classified with great specificity, it is challenging to identify weed species within the group. Regarding the study of weeds, the definition of a weed is that it is any unpleasant action carried out by a plant in a field that competes with agricultural plants for resources. These plants are teeming with largely unidentified substances and strange chemical compounds that could be therapeutic [13]. Most (perhaps as many as 99% of the flowering plants) have never been tested [14]. A few are known to traditional tribal community. One of the earliest papers that listed 26 common weeds' medicinal applications was written by Henkel in 1904 [15]. The actual and prospective use of plants in medicine has long piqued the curiosity of many scientific groups. Drugs made from medicinal plants are more affordable, have less adverse effects, and are thus more widely used by humans. According to a study, around 80% of the world's population relies on weed and similar plants since they are well-known for curing a variety of maladies. About 90% of the herbal ingredients used in traditional medicinal systems like Ayurveda and Siddha, including stem, bark, root, root bark, rhizome, leaf, flower, fruit, and seeds, are either complete plants or parts of them. Secondary metabolites including resin, gum, and latex have also been used as drugs to some extent [16].

2. GOKHARU (ASTERACEAE)

Gokharu *Xanthium strumarium* L. has been used medicinally for thousands of years [17]. Burweed

is its English name, and the native term for it in India is Gokharu [18]. Since ancient times, Gokharu has been used as a traditional herbal remedy to treat a variety of human illnesses, such as rhinitis, nasal sinusitis, headaches, stomach ulcers, urticaria, rheumatism caused by bacterial and fungal infections, and arthritis [19].

3. KHAKSI (BRASSICACEAE)

Sisymbrium officinale, often known as Khaksi or Hedge Mustard, is a common weed in South Asia and South Australia [20]. It grows frequently in waste areas, disturbed sites, pastures, roadsides, and crops. According to Blažević et al. Khaksi is also known as wild mustard (Jangli Sarsoon), hedge mustard, Oriental mustard, tumbling mustard, and Indian hedge mustard. Its scientific name is *Sisymbrium officinale*. The khaksi plant is very important in medicine. Its plants, whether they are fresh or dried, have medical effects on people. It is utilised as herbal medicine. It promotes the treatment of fever, asthma, coughing, and chest congestion, It helps to reduce swelling and inflammation, cleanse the spleen and liver, remove piles, and heal wounds. It is briefly employed as a treatment for rheumatic, gout, and arthritic issues. It also plays a vital part in the treatment of anti-inflammatory disorders with the goal of avoiding the main synthetic medications that are frequently used and their prevalent undesirable side effects. Traditional medicinal plants used in diet and herbal therapies might be a viable source for new, powerful medications. Additionally, the wild plant's stems and leaves have historically been added to salads as nourishment [21].

4. JANGLI PALAK (POLYGONACEAE)

It is a species of flowering plant in the knotweed family known by the common names toothed dock and Aegean dock. *Rumex dentatus* is generally recognised as an invasive species in areas outside of its native range in North Africa and portions of Eurasia. It flourishes in unnatural environment, frequently in damp places like lakeshores and the borders of farmed fields. Its young, fragile leaves are prepared as vegetables. Regarding medicine, its roots are applied as an astringent in the treatment of skin conditions. When incorporating this plant into their diets, people who are prone to rheumatism, arthritis, gout, kidney stones, or hyperacidity should exercise extra caution because it may make their condition worse [22].

5. BATHU (AMARANTHACEAE)

Chenopodium album is rapidly growing annual weed plant, belongs to genus *Chenopodium* [23]. It is cultivated in few regions but elsewhere in world it is nominated as weed. This plant belongs to the *Chenopodium* genus, which has 250 widely scattered species worldwide [24]. Bathu is used as an anthelmintic, diuretic, digestive, carminative, and laxative. Additionally, it helps with general weakness, peptic ulcer, indigestion, flatulence, strep throat, pharyngopathy, splenopathy, and ophthalmopathy. On alleviate irritation, leaves are ground into a fine powder, and leaf juice is applied to burns. When combined with regular meals, the powdered plant (25–50%) was said to reduce the oestrus cycle. On the body portions afflicted by rheumatism and arthritis, a decoction of aerial parts is applied. You may eat the delicate shoots uncooked in salad or with curd. The leaves are abundant in vitamin C and potassium. Its use for the treatment of hepatic disorders, spleen enlargement, intestinal ulcers and burns.

6. GAJARBOOTI (ASTERACEAE)

Santa-Maria, whitetop weed, and famine plant are some of its common names. Locally, it is known as GajarBooti, Congress Grass, or Carrot Grass in the subcontinent. The benefits of *Parthenium hysterophorus* for human health are numerous. The primary advantages are that it may be used to treat skin inflammation [25], rheumatic pain, diarrhoea [26], urinary tract infections, dysentery, malaria, and neuralgia [27].

7. INDIAN ABUTILON, INDIAN MALLOW (MALVACEAE)

Abutilon indicum is a small shrub native to tropical and subtropical regions. It is extremely good to the eyes; its seeds have specific qualities that help to alleviate piles symptoms, Stomach disorders, Ulcers, Cough, Jaundice and Aphrodisiac [28,29].

8. SESSILE JOYWEED, DWARF COPPERLEAF (AMARANTHACEAE)

Alternanthera sessilis is a perennial herb belongs to *Amaranthaceae* family. It is good for the patients who are suffering from Leprosy, Fever, Night blindness types of diseases [30,31].

9. SLENDER AMARANTH (AMARANTHACEAE)

Amaranthus viridis is a annual. It has several medicinal properties which can help to cure Indigestion, Ear diseases, Skin eruption, Fever, Worm infestation, Abdominal disorder [32,33].

10. INDIAN CATMINT (LAMIACEAE)

Anisomeles indica plant is used to treat skin conditions like snakebites and as an analgesic and anti-inflammatory. It also has a variety of pharmacological effects, including antibacterial, anti- HIV, and anti-cancer ones [34].

11. PUNARNAVA (NYCTAGINACEAE)

Boerhaavia diffusa is mentioned in the Charak Samhita as a remedy for a number of ailments, including Pandu (Anemia), Shotha (Swelling/inflammation), Shopha (Swelling), Hridroga (CVS Diseases), Kasa (Cough), Arsha (Hemorrhoids), Vrana (Wound), Urahkshata (Pulmonary Cavitations), Shoola (Colic), etc. [35].

12. NUT GRASS (CYPERACEAE)

The rhizomes of *Cyprus rotundus* are regarded as having astringent, diaphoretic, diuretic, analgesic, antispasmodic, aromatic, carminative, antitussive, emmenagogue, litholytic, sedative, stimulant, stomachic, vermifuge, tonic, and antibacterial properties in Ayurvedic medicine. Traditional herbal remedy *C. rotundus* is frequently used as an analgesic, sedative, antispasmodic, antimalarial, to treat gastrointestinal issues, and to reduce diarrhoea. It is a plant with many uses, and traditional medicines from all over the world utilise it to cure stomach problems, wounds, boils, and blisters. When treating cholera, the roots are cooked with an equivalent amount of mint (*Minthapiperata*). A paste prepared from roots, turmeric, and curd is applied to the face to treat acne and enhance beauty. To stimulate lactation, breasts are covered in root paste [36].

13. DOOB GRASS (POACEAE)

A perennial grass with several therapeutic uses is called *Cynodon dactylon*. In various regions of the world, it is also known as Bermuda grass, Dog tooth grass, Scutch grass, Doob, and Durba. Metabolites such proteins, carbohydrates,

alkaloids, glycosides, flavonoids, etc. are abundant in the plant. An efficient home treatment for detoxification is *Cynodon dactylon*. Every morning on an empty stomach, consume *Cynodon dactylon* juice to aid in the removal of toxins from the body. Skin conditions including scabies and eczema can be treated using a paste produced from *Cynodon dactylon* and turmeric [37]. Nerves respond well to doob grass. The nerves are strengthened by it. Its juice is beneficial for the neurological system when consumed regularly. Due to an appropriate amount of chlorophyll, Bermuda grass is beneficial for anaemic individuals as it aids in the development of red blood cells (RBC) [38].

14. ASTHMA WEED (EUPHORBIACEAE)

The herb *Euphorbia hirta* is sometimes referred to as "Dudhy." Medicine is made from the portions of the plant that are grown above ground. Breathing abnormalities, dengue fever, digestive issues, severe diarrhoea, and many other illnesses are treated with *Euphorbia hirta* [39,40]. In India's traditional medical system, it is frequently used to treat diabetes. Additionally, it has analgesic, antipyretic, analgesic, and anti-inflammatory properties.

15. DATURA (SOLANACEAE)

Datura stramonium grows naturally in the wild. It mostly comprises very dangerous tropane alkaloids including atropine, hyoscyamine, and scopolamine [41]. *Datura* has been linked to a number of health benefits, including the ability to alleviate conditions including motion sickness, Parkinson's disease, and asthma [42]. It also has anti-microbial characteristics [43], is poisonous to pesticides, and has anti-inflammatory and acaricidal effects. It has also been suggested that *datura* possesses anti-cancer action [44].

16. HAZARDANA (EUPHORBIACEAE)

A plant known as *Phyllanthus niruri* may have health advantages. Urinary tract stones and ulcers may be treated with it. It has long been used in herbal medicine to treat a variety of ailments, such as urinary tract stones, dysentery, ulcers, swelling, and diseases that primarily affect the genital organs, particularly the urinary tract. The herb is also used to cure colds, skin conditions, and gastrointestinal problems [45,46].

17. BHRINGRAJ (ASTERACEAE)

One well-known plant, bhringraj (*Eclipta alba*), is used to treat liver problems and promote hair growth. Additionally, it works well for treating illnesses of the skin, cough, asthma, eye conditions, and illnesses affecting any portion of the head. It addresses early hair greying, promotes hair growth, and stops hair fall [47]. It protects many skin problems and enhances the colour and radiance of the skin. It is more helpful in treating chronic skin conditions such eczema, pruritus (severe itching), chronic wounds, and skin ulcers. It promotes bile synthesis from the liver, accelerates metabolism, relieves constipation, and improves liver functioning [48].

18. THUMMICHITTU (LAMIACEAE)

Leucas aspera, sometimes called "Thumbai," is found all across India, from the Himalayas to Ceylon. The plant has historically been employed as a pesticide and antipyretic [49]. It has been demonstrated to have a variety of pharmacological effects in terms of medicine, including antifungal, antioxidant, antibacterial, antinociceptive, and cytotoxic action. Traditional medicine has used it to cure scorpion bites. Constantly stroking the affected region with leaves brings alleviation. The plant's leaf juice is used to lessen the effects of the toxicity of a snake bite that causes unconsciousness. Juice droplets are inserted into the nostrils. It assists in lowering fever.

19. GHOL (PORTULACACEAE)

Portulaca oleracea being regarded as an invasive plant in certain places, it makes for a wonderful leaf vegetable [50]. It is a plant that has a variety of medical applications. Clinically, purslane is reportedly a popular treatment for dysentery, acute gastroenteritis, diarrhoea, etc. It enhances bone and dental health [51]. This plant can enhance the functioning of the muscles, blood, and nerves.

20. BUSH OKRA OR JUTE MALLOW (MALVACEAE)

In Middle Eastern and African civilizations, moroheiya leaf is used to treat malnutrition, nutritional deficiencies, and hunger [52]. *Corchorus olitorius* has antioxidant properties and gives protection against certain toxins, such as lead and arsenic. There are no scientific

investigations to substantiate the claims that the leaves have antibacterial, anticancer, and anti-inflammatory properties [53]. The terms "laxative," "carminative," and "diuretic" are all used in folklore.

21. MITHIPATTI, GHODATULSI (PLANTAGINACEAE)

Scoparia dulcis Linn, sometimes known as sweet broom weed, is an important ethnomedicinal plant that is extensively distributed in subtropical and tropical areas of India, Brazil, America, Myanmar, and the West Indies. This herb is used as an aphrodisiac, blood purifier, emetic, febrifuge, hepatic, hypoglycemic, stomachic, antibiotic, antidote, and febrifuge [54]. For fevers, a root decoction is employed. The whole plant is used to cure a variety of ailments, including as diabetes, herpes, colds and coughs, fevers, nausea, and vertigo. It also functions as an antidote for snakebites and cassava poisoning.

22. CONCLUSION

Weeds are very harmful for our crops in agriculture, but we can't ignore their importance in pharmaceutical industry. But as science develops, it opens new doors for the uses of weeds as medicine. Therefore, agriculturists should pay special attention to identify beneficial weeds. It is concluded that weeds are valuable medicines and should be protected. They are rich sources of various chemicals that can be used directly for curing many human diseases. It is imperative that the world become aware of the medicinal benefits of weeds.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Jack K. The importance of herbs. The Farmer. Northeast Organic Farming Association, (NOFA), 411 Sheldon Rd., Barre, MA 01005. 2012;1-5.
2. Qazi MA, Molvi K. Herbal medicine: A comprehensive review. J Pharmaceut. Res. 2011;8:1-5.
3. Goyal M, Sasmal D, Nagori BP. Ayurveda the ancient science of healing: An insight. In: Vallisuta O, Olimat S.M, editors. Drug Discovery Research in Pharmacognosy. Croatia: InTech. 2012;1-10.
4. Watanabe K, Matsuura K, Gao P, Hottenbacher L, Tokunaga H, Nishimura K. Traditional Japanese Kampo medicine: Clinical research between modernity and traditional medicine– The state of research and methodological suggestions for the future. Evidence-Based Complementary and Alternative Medicine. 2011;1-19.
5. Kumar S, Pandey AK. Chemistry and biological activities of flavonoids: an overview. The Scientific World Journal. 2013;2013.
6. Nayar MP, Sastry ARK. Red data book of Indian plants; 1987.
7. Bent S, Ko R. Commonly used herbal medicines in the United States: a review. The American Journal of Medicine. 2004;116(7): 478-85.
8. Bilal M, Haseeb A, Khan MH, Arshad MH, Ladak AA, Niazi SK, Musharraf MD, Manji AA. Self-medication with antibiotics among people dwelling in rural areas of Sindh. J. Clin. Diagnos. Res. 2016;10(5):08–13.
9. Singh R, Singh A. WEEDS: An important source of natural medicine. J Drug MetabToxicol. 2020;11:253. DOI: 10.35248/2157-7609.20.11.253.
10. Li R, Huang J. Chromatographic behavior of epirubicin and its analogues on high-purity silica in hydrophilic interaction chromatography. J Chromatogr A. 2004;1041:163–169.
11. Strega MA, Stevenson S, Lawrence SM. Mixed-mode anion-cation exchange/hydrophilic interaction liquid chromatography– electrospray mass spectrometry as an alternative to reversed phase for small molecule drug discovery. Anal Chem. 2000;72:4629–4633
12. Oyler AR, Armstrong BL, Cha JY, Zhou MX, Yang Q. Hydrophilic interaction chromatography on amino-silica phases complements reversed-phase high-performance liquid chromatography and capillary electrophoresis for peptide analysis. J Chromatogr A. 1996;724:378-83.
13. Swerdlow JL. Nature's Rx. National Geographic. 2000;98–117.
14. Bryson B. A short history of nearly everything. New York: Broadway Books; 2005.
15. Henkel A. Weeds used in medicine. U.S. Dept. of Agriculture, Washington, D.C. Farmers' Bulletin No. 1994;188:45.
16. Abera B. Medicinal plants used in traditional medicine by Oromo people,

- Ghimbi District, Southwest Ethiopia. Journal of Ethnobiology and Ethnomedicine. 2014;10(40):1-15.
17. Ramírez-Erosa I, Huang Y, Hickie RA, Sutherland RG, Barl B. Xanthatin and xanthinosin from the burs of *Xanthium strumarium* L. as potential anticancer agents. Canadian J. Physio. Pharma. 2007;85(11):1160-1172.
 18. Gethe RM, Dingre SK, Pawar DD, Sonawane SV. Effect of Weed Management on Soybean (*Glycine max.* L. Merrill). J. Life Sci. 2011;8(3):278-279.
 19. Fan W, Fan L, Peng C, Zhang Q, Wang L, Li L, Wu C. Traditional uses, botany, phytochemistry, pharmacology, pharmacokinetics and toxicology of *Xanthium strumarium* L.: a review. Molecules. 2019;24(2):359.
 20. Guarise, M, Borgonovo, G, Bassoli A, Ferrante A. Evaluation of two wild populations of hedge mustard (*Sisymbrium officinale* (L.) Scop.) as a potential leafy vegetable. Horti. 2019;5(1):13-23.
 21. Blažević I, Radonić, A, Mastelić, J, Zekić, M, Skočibušić, M, &Maravić, A. Hedge mustard (*Sisymbrium officinale*): chemical diversity of volatiles and their antimicrobial activity. Chem. Biodiv. 2010;7(8):2023-2034.
 22. Ali MF, Jamil MA, Adnan M, Sulaman M. Bio-medical importance of agronomic weeds: An overview. Int. J. Phar. &Biomed. Rese. 2021;8(1):1-8.
 23. Pandey S, Gupta RK. Screening of nutritional, phytochemical, antioxidant and antibacterial activity of *Chenopodium album* (Bathua). J. Pharmacog. Phytochem. 2014;3(3):1-9.
 24. Sukhorukov AP, Kushunina MA. Taxonomic revision of chenopodiaceae in Nepal. Phytotaxa. 2014;191(1):10-44.
 25. Patel S. Harmful and beneficial aspects of *Parthenium hysterophorus*: an update. Biotech. I 2011;(1):1-9.
 26. Maishi AI, Ali PS, Chaghtai SA, Khan G. A proving of *Parthenium hysterophorus*, L. British Homoeo. J. 1998;87(1):17-21.
 27. Fazal HINA, Ahmad N, Ullah I, Inayat H, Khan L, Abbasi BH. Antibacterial potential in *Parthenium hysterophorus*, *Stevia rebaudiana* and *Ginkgo biloba*. Pak. J. Bot. 2011;43(2): 1307-1313.
 28. Khadabadi SS, Bhajipale NS. A review on some important medicinal plants of *Abutilon* spp. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 2010;1(4):718-729.
 29. Immanuel RR, Elizabeth L. Weeds in Agroecosystems: A source of medicines for human healthcare. International Journal of Pharm Tech Research. 2009;1(2):375-385.
 30. Dhanam S, Elayaraj B. Ethanomedicinal aspects of some weeds from paddy fields of Villupuram district in Tamil Nadu, India. International Letters of Natural Sciences. 2014;14:1-10.
 31. Debnath M, Nandi M, Biswas M. A critical pharmacognostical evaluation and preliminary phytochemical investigation of *Alternanthera sessilis* (L.) R. Br. Leaves. Indian Journal of Pharmaceutical Science & Research. 2014;4(2):71-74.
 32. Immanuel RR, Elizabeth L. Weeds in agroecosystems: A source of medicines for human healthcare. International Journal of Pharm Tech Research. 2009;1(2):375-385.
 33. Reyad-ul-Ferdous M, Shahjahan DMS, Tanvir S, Mukti M. Present biological status of potential medicinal plants of *Amaranthus viridis*: A comprehensive review. American Journal of Clinical and Experimental Medicine. 2015;3(5-1):12-17.
 34. Baranwal, V.K, Ircchayia, R. and Singh, S. *Anisomelesindica*: an overview. International Research Journal of Pharamacy. (2012) ;3(1).
 35. Kumar A, Kumar S, Singh T, Ram B. Medicinal uses of punarnava (*Boerhaavia diffusa* Linn.) based on brihatrayi. World Journal of Pharmaceutical Research. 2016;5(12).
 36. Qureshi R, Bhatti GR, Memon RA. Ethanomedicinal uses of herbs from northern part of Nara desert, Pakistan. Pak J Bot. 2010;42(2):839-851.
 37. Muthu C, Ayyanar M, Raja N, Ignacimuthu S. Medicinal plants used by traditional healers in Kancheepuram district of Tamil Nadu, India. Journal of Ethnobiology and Ethnomedicine, 2006; 2(43):1-10
 38. Debbarma M, Pala NA, Kumar M, Bussmann RW. Traditional knowledge of medicinal plants in tribes of Tripura in northeast India. African Journal of Traditional, Complementary, and Alternative Medicines. 2017;14(4):156-168.
 39. Dhanam S, Elayaraj B. Ethanomedicinal aspects of some weeds from paddy fields of Villupuram district in Tamil Nadu, India. International Letters of Natural Sciences. 2014;14:1-10.

- 40 Bhattachariya DK, Borah PC. Medicinal weeds of crop fields and role of women in rural health and hygiene in Nalbari district, Assam. *Indian Journal of Traditional Knowledge*. 2008;7(3):501-504.
- 41 Gaire BP, Subedi L. A review on the pharmacological and toxicological aspects of *Datura stramonium* L. *Journal of Integrative Medicine*. 2013;11(2):73-9.
- 42 Pretorius E, Marx J. *Datura stramonium* in asthma treatment and possible effects on prenatal development. *Environmental Toxicology and Pharmacology*. 2006;21(3):331-7.
- 43 Al-ghamdi Aay. Inhibition of *Candida albicans* and *Streptococcus mutans* with datura leaf and seed extracts. 2014;4.
- 44 Soni P, Siddiqui AA, Dwivedi J, Soni V. Pharmacological properties of *Datura stramonium* L. as a potential medicinal tree: an overview. *Asian Pacific Journal of Tropical Biomedicine*. 2012; 2(12): 1002-8.
- 45 Kokwaro JO. Medicinal plants of East Africa. 1st Edn, East Africa Literature Bureau, Nairobi. 1976;58-59.
- 46 Iwu MM. Modalities of drug administration: Hand Book of African Medicinal Plants. CRC Press Inc, Florida. 1993;309-330.
- 47 Jeeva S, Kiruba S, Mishra BP, Venugopal N, Dhas SSM, Regini GS et al. Weeds of Kanyakumari district and their value in rural life. *Indian Journal of Traditional Knowledge*. 2006; 5(4):501-509.
- 48 Saraswat VP, Verma S, Musale SV, Jaiswal ML. A review on traditional and folklore uses, phyto-chemistry and pharmacology of *Eclipta alba* (L.) Hassk. *International Ayurvedic Medical Journal*. 2015;3(8):2462-2469.
- 49 Immanuel RR, Elizabeth L. Weeds in agroecosystems: A source of medicines for human healthcare. *International Journal of Pharm Tech Research*. 2009;1(2):375-385.
- 50 Chowdhary CV, Meruva A, Naresh K, Kumar RA, Elumalai. A review on phytochemical and pharmacological profile of *Portulaca oleracea* Linn. (Purslane). *International Journal of Research in Ayurveda and Pharmacy*. 2013;4(1):34-37.
- 51 Divakar MC, John J, Vyshnavidevi, Poornima, Anisha, Subash A, et al. Herbal remedies of Madayipara hillock tribals in Kannur district, Kerala, India. *Journal of Medicinal Plants Studies*. 2013;1(6):34-42.
- 52 Al-Snafi AE. The contents and pharmacological importance of *Corchorus capsularis* – A review. *IOSR Journal of Pharmacy*. 2016;6(6):58-63.
- 53 Khare CP. *Indian herbal remedies*. Springer-Verlag, Berlin, Heidelberg. 2007;172.
- 54 Mishra MR, Mishra A, Pradhan DK, Panda AK, Behera RK, Jha S. Antidiabetic and antioxidant activity of *Scoparia dulcis* Linn. *Indian Journal of Pharmaceutical Sciences*. 2013;75(5):610-614.

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